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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/595,363	06/15/2000	Koichi Miyachi	49924(820)	9295

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EXAMINER

NGUYEN, JIMMY H

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 06/25/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/595,363

Applicant(s)

MIYACHI, KOICHI

Examiner

Jimmy H. Nguyen

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 21 April 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 2673

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 04/21/2003 (entered into the file wrapper as Paper No. 8). Claims 1-23 are currently pending in the application. An action follows below:

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features, "the voltages supplied to the pixel electrode have a positive polarity and a negative polarity with respect to a potential level of the counter electrode during the display of image" of independent claims 1, 2, 10 and 11, "scan start signal supplying means for ... supply period" of claim 16, lines 9-14, and "the supply control means outputs a control signal for setting the latch circuit number "m" to ... external" of claim 18, lines 5-8, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2673

As per claims above, it is not clear what the Applicant means “the voltages supplied to the pixel electrode have a positive polarity and a negative polarity with respect to a potential level of the counter electrode during the display of image” of independent claims 1, 2, 10 and 11, i.e., the voltages supplied to a single pixel electrode at the same time have a positive polarity and a negative polarity with respect to a potential level of the counter electrode during the display of images, or at a time, a voltage supplied to a single pixel electrode has a positive polarity with respect to a potential level of the counter electrode, and at another time, another voltage supplied to the same pixel electrode has a negative polarity with respect to a potential level of the counter electrode.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding to these claims, the disclosure, when filed, does not contain sufficient information regarding to the claimed feature, “the voltages supplied to the pixel electrode have a positive polarity and a negative polarity with respect to a potential level of the counter electrode during the display of image” of independent claims 1, 2, 10 and 11. The disclosure, specifically page 12, line 22 to page 13, line 16 and page 52, line 14 to page 53, line 14, discloses the voltage of the black signal power supply (V_r) in the case of positive polarity with respect to the potential

Art Unit: 2673

level of the counter electrode, or in the case of negative polarity with respect to the potential level of the counter electrode. However, the underlined claimed feature above is not described in detail or illustrated in any drawing, e.g., a drawing to show voltage waveforms of pixel electrode and counter electrode, or in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

7. Due to the rejections under 35 USC 112, first and second paragraphs above, the following are based as sets understood by examiner.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 5, 7, 9, 10, 14, 19, 20 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Verhulst (USPN: 5,627,560, cited in IDS filed on 03/13/01).

As per claims 1, 10, 19, 20 and 23, the claimed invention reads on Verhulst as follows: Verhulst discloses a liquid crystal display (LCD) device and an associated method for displaying an image, the LCD device (see fig. 1) comprising a display panel (a matrix of pixels, see col. 3, line 5), a column line driver (a data register 9, multiplexer circuits 10 and the earth voltage supply 12) including an earth voltage supply (12) (corresponding to the claimed black signal generating means) for generating an earth voltage (i.e., the claimed black display signal) during an interval t0-t1 or a first display mode, a row line driver (a multiplexer circuit 6), and a display

Art Unit: 2673

control section (a processing/drive unit 8) for receiving video image information (7), supplying the processed video image signal (7') and control signal (17) to the column line driver and supplying control signal (17) to the row line driver (col. 3, lines 13-30). As noting in figs. 1 and 5, and col. 3, lines 15-23, Verhulst discloses the column driver circuit (9, 10 and 12) providing data signal corresponding to the input image data (7) (further see fig. 5, a data signal of Vdata during an interval t1-t2) and earth voltage (i.e., the claimed black display signal) to column electrodes (further see fig. 5, Vdata during an interval t0-t1). In other words, Verhulst's column driver circuit inherently comprising a signal-use reference power supply signal in order to provide a data signal during an interval t1-t2 or a second display mode and multiplexer circuits (10) (corresponding to the claimed selector switch) for switchedly selecting alternately between the black display signal and the data signal. Verhulst further discloses the control signal (17) inherently including a select signal for making the 1st row line (see fig. 5, for the case when n=1) selected while the data signal is provided to column lines during an interval t1-t2, and for making the 5th row line (i.e., n+4th) selected while the black signal is provided to column lines during an interval t0-t1, and a discriminating signal for discriminating whether it is the black display signal period (the interval t0-t1) or the data signal period (the interval t1-t2). Furthermore, as noting in fig. 5, Verhulst expressly teaches, e.g., considering a pixel electrode in row 5, during an interval t0-t1, a data voltage ($V_{data} = 0$ volt) supplied to the pixel electrode (of row 5) has a positive polarity with respect to a potential level of the counter electrode ($V_{com} = V_{reset} < 0$), thereby displaying a clear image at the pixel electrode, and during an interval t9-t10, a data voltage ($V_{data} < 0$) supplied to the pixel electrode (of row 5) has a negative polarity with respect to a

Art Unit: 2673

potential level of the counter electrode ($V_{com} = V_{comsel} > 0$), thereby displaying a normal image at the pixel electrode. Accordingly, the Verhulst reference anticipates these claims.

Regarding to claims 5 and 14, as noting in fig. 5, Verhulst further discloses that the supply time of the data signal (t_1-t_2) is equal to the supply time of the black signal (t_0-t_1).

Therefore, these claims are rejected for the reason as set forth above.

Regarding to claim 7, Verhulst further teaches that the distance in time between the presentations of the black signal and the data writing signal depends on the switching time of the liquid crystal material being used and can be chosen to be sufficiently long to bring the pixels to their extreme transmission state (col. 2, lines 32-50 and col. 4, line 67 through col. 5, line 7).

Therefore, this claim is rejected for the reason as set forth above.

Regarding to claim 9, Verhulst also discloses the relationships of the voltage of data signal (see fig. 5, the voltage of V_{data} during t_1-t_2 , t_3-t_4 , etc.) and the voltage of the black display signal (see fig. 5, the voltage of V_{data} during t_0-t_1 , t_2-t_3 , etc.) when the counter electrode alternates every field. Therefore, this claim is rejected for the reason as set forth above.

10. Claims 2-4, 8, 11 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Verhulst (WO 97/31362, cited in IDS filed on 03/13/01), hereinafter Verhulst II.

As per claims 2-4, 11 and 15, the claimed invention reads on Verhulst II as follows:
Verhulst II discloses a liquid crystal display (LCD) device and an associate method for displaying an image, the LCD device (see fig. 1) comprising a display panel (a matrix of pixels, see page 4, lines 26-28), a column line driver (a data register 9), a row line driver (a row driver circuit 6), and a display control section (a processing/control unit 8) for receiving video image information (7), supplying the processed video image signal (7') and control signal (17) to the

Art Unit: 2673

column line driver and supplying control signal (17) to the row line driver (page 4, line 32 through page 5, line 5). Further, Verhulst II's column line driver inherently comprises a signal-use reference power supply signal in order to provide the data pulse during a data signal supply period (the writing period t_w) and the black display signal power supply for generating a black display signal during a black display signal supply period (a reset voltage during the first part t_r , see figs 4A-4B, page 6, lines 10-12), and a selector switch for switchedly selecting alternately between the black signal and a data signal (a data pulse 44 during the second part t_w on the selected pixel, see figs. 4A-4B, page 4, lines 33-34, page 6, lines 10-21). Verhulst II further discloses the control signal (17) inherently including a select signal for making the n^{th} row line selected while the data signal (data pulse 44) is provided to column lines, and for making the $n+1^{\text{th}}$ to $n+8^{\text{th}}$ row lines selected while the black signal is provided to column lines, and a discriminating signal for discriminating whether it is the black display signal period (a reset period t_r) or the data signal period (t_w) (see figs. 4A-4B, page 7, lines 15-17). Furthermore, Verhulst discloses the number of row lines which is provided with a reset pulse may vary (page 7, lines 11-12). Furthermore, Verhulst II expressly teaches the counter electrode supplied with a voltage of approximately 0 volt (page 6, line 14) and the voltages supplied to pixel electrode having a positive polarity and a negative polarity with respect to a potential level of the counter electrode, in order to display a clear image or a normal image (figs. 4a-4d). Accordingly, the Verhulst II reference anticipates these claims.

As per claim 8, Verhulst II further teaches that, in order to achieve a complete reset (i.e., to change a white pixel to a black pixel), the value of k is set to 8 (see page 6, line 22 through

Art Unit: 2673

page 7, line 1). Accordingly, Verhulst II discloses the claimed invention as specified in claim above.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst II as applied to claim 15 above.

Regarding to claims 16-18, as noting in figs. 1 and 4a, Verhulst II discloses the display control section (8) providing to the row driver (6) the control signals (17) inherently comprising a scan start signal in order to control the scanning operation of the row driver, and the row driver inherently comprising scan start signal supplying means for supplying the scan start signal, thereby providing selection pulse (41) for writing black display signal and selection pulse (42) for writing data display signal. Accordingly, Verhulst II discloses the claimed device except for the row driver comprising a shift register, which includes a plurality of latch circuits. However, Official Notice is taken that the LCD row driver comprising a shift register, which includes a plurality of latch circuits, is well known and expected in the art. It would have been obvious to one skilled in the art at the time of the invention to have included the shift register including a plurality of latch circuits in Verhulst's display device because this would provide a thin LCD display since the row driver can be integrated in the same substrate in which the LCD panel and data driver are disposed on.

Art Unit: 2673

13. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claims 1 and 10 above, and further in view of Crossland et al. (USPN: 4,655,550, cited in IDS filed on 03/13/01), hereinafter Crossland.

Regarding to claims above, as noting in figs. 1 and 5, Verhulst further discloses the control signal (17) from display control section (8) including a switching control signal in order to switching the voltages providing to the column electrodes between the supply time of the data signal (t_1-t_2) and the supply time of the black signal (t_0-t_1), and the supply time of the data signal (t_1-t_2) equal to the supply time of the black signal (t_0-t_1). Accordingly, Verhulst discloses the claimed device except for the supply time of the data signal longer than the supply time of the black signal.

However, Crossland discloses a related LCD device, wherein the supply time of the data signal (t) is longer than the supply time of the black signal (t') (see figs. 6-7, col. 3, lines 27-66). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Crossland's teaching, i.e., providing the supply time of the data signal (t) longer than the supply time of the black signal, in the device of Verhulst because this would prevent the crosstalk problem while still maintaining the operational speed of the display, as taught by Crossland (col. 2, lines 5-11).

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claim 10 above, and further in view of Okada et al. (USPN: 4,778,260, cited in IDS filed on 03/13/01), hereinafter Okada.

Regarding to claim above, Verhulst discloses the claimed device except that Verhulst does not disclose expressly the row lines divided into L blocks on an m-line basis and the row line driver comprising L partial row line drivers.

However, Okada discloses a LCD device, wherein the row lines divided into 3 blocks (L=3) and the scanning line driver circuit (86) (corresponding to the claimed row line driver) comprising 3 partial scanning line driving circuits (see fig. 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Crossland's teachings above, i.e., dividing the row lines into L blocks on an m-line basis and the row line driver comprising L partial row line drivers, in the device of Verhulst because this would provide a large display device having a high reliability while providing a high density and a high speed operation, as taught by Okada (col. 9, lines 56-62).

15. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claim 19 above, and further in view of Kuga (EP 0 655 725 A1, cited in IDS filed on 03/13/01).

Regarding to claims above, Verhulst discloses the claimed device except for motion picture/still picture discriminating means, as claimed.

However, Kuga discloses a related LCD device (see fig. 2) comprising motion picture/still picture discriminating means (a comparator 14, see abstract, or determining means, col. 2, lines 11-16) for monitoring data based on an image signal (video signal) derived from the display control section (a circuit including elements 10, 12, 13, 15), thereby determining whether a present input video signal corresponds to a stationary image or a moving image and generating a command signal provided to the controller (15) (i.e., the claimed display control section),

Art Unit: 2673

which controls the operations of the LCD drivers. It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize Kuga's motion picture/still picture discriminating means in the device of Verhulst because this would provide a low power consumption display device (col. 6, lines 12-22).

16. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhulst, as applied to claim 19 above, and further in view of Motomura et al. (EP 0 730 371 A2, cited in IDS filed on 03/13/01), hereinafter Motomura.

Regarding to claims above, Verhulst discloses the claimed device except for a backlight and backlight adjusting means, as claimed.

However, Motomura discloses a related LCD device (see fig. 2) comprising a backlight (8) and backlight adjusting means (luminance setting means 9) for lower the luminance of the backlight or stop the emission of the backlight during display a black level (i.e., the first display mode) (col. 2, lines 26-33 and col. 3, lines 15-25). It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide Motomura's a backlight and backlight adjusting means in the device of Verhulst because this would improve the quality of the image picture of the LCD device with a low power consumption (col. 1, lines 46-53 and col. 2, lines 1-6).

Response to Arguments

17. Applicants' arguments filed 04/21/03, have been fully considered but they are not persuasive because as follows:

With respect to the drawing objection of figures 8-10, 15, 17 and 22B, the proposed drawing correction filed 04/21/03 is approved, and this drawing objection is hereby withdrawn.

With respect to the drawing objection under 37 CFR 1.83(a) relating to the feature, “scan start signal supplying means... period of claim 16, applicant’s argument on page 14 is not persuasive, because applicant states the scan start signal supplying means as being part of the display section 20 as well as supported in the specification, while scan start signal supplying means of claim 16 is part of the row line driver, see claim 16, lines 6-14. Accordingly, this drawing objection is maintained.

With respect to the drawing objection under 37 CFR 1.83(a) relating to the feature, “the supply control means outputs a control signal for setting the latch circuit number “m” to ... external” of claim 18, lines 5-8, applicant’s argument on page 14 is not persuasive, because no drawing shows a control signal for setting the latch circuit number “m” to the scan start signal supplying means based on a scan start position designating signal, e.g., in what figures, the claimed control signal and the claimed scan start position designating signal can be found. Accordingly, this drawing objection is maintained.

With respect to the drawing objection under 37 CFR 1.83(a) relating to the feature of claim 19, applicant’s argument on page 15 is persuasive, this drawing objection is hereby withdrawn.

With respect to the art rejections, pages 16-19, applicant state that the Verhulst and Verhulst II references relate to a ferro-electric liquid crystal display, and the present invention relates to nematic liquid crystal display (assuming the disclosure supporting for the nematic liquid crystal display). Examiner disagrees because although the claims are interpreted in light of the specification, limitation (nematic liquid crystal material) from the specification are not read into the claims. Further, applicant states that Verhulst teaches the pixels driven only by a

negative voltage and reset only by a positive neutralizing voltage relative to the counter electrode”, page 16, lines 19-21, examiner agrees; however, the claimed invention merely recites “the voltages supplied to the pixel electrodes have a positive polarity and a negative polarity with respect to a potential level of the counter electrode during the display of images”, and as discussed above, Verhulst expressly teaches a voltage supplied to the pixel electrode having a positive polarity with respect to a potential level of the counter electrode in order to display a clear image, and a voltage supplied to the pixel electrode having a negative polarity with respect to a potential level of the counter electrode in order to display a normal image. Accordingly, examiner believes the limitation read in the Verhulst reference. Further, the Verhulst II reference similar as the Verhulst reference expressly teaches the limitation above. For the above reasons, it is believed that the rejections should be sustained.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2673

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is (703) 306-5422.

The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JHN
June 19, 2003


Amare Mengistu
Primary Examiner